Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-82. (Canceled).

83. (Currently Amended) An apparatus for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the apparatus comprising:

channel coding means for encoding the source data to generate (N-1) ~~number of~~ data parts [[part]] and a control part, wherein the data parts are [[part is]] allocated to the data channels ~~channel~~ and the control part is allocated to the control channel;

code generating means for generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

spreading means for spreading the control part and the data part by using the spreading codes [[code,]] to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, ~~and wherein said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part, and wherein~~

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes the spreading factor and 0 the code number, [[and]]

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1}, ~~respectively,~~

when there are more than two data channels, the spreading codes allocated to [[the]] a third data channel and, when present, a fourth data channel ~~channels~~ are represented by $C_{4,3}$ = {1, -1, -1, 1}, ~~respectively,~~ and

when there are more than four data channels, the spreading codes allocated to [[the]] a fifth data channel and, when present, a sixth data channel ~~channels~~ are represented by $C_{4,2}$ = {1, -1, 1, -1}. ~~, respectively.~~

84-85. (Canceled).

86. (Currently Amended} The apparatus as recited in claim 83, wherein said code generating means includes:

control means responsive to the spreading factor [[,]] for generating code numbers for the channels; and

spreading code generation means responsive to the spreading factor and the code number [[,]] for generating the spreading code to be allocated to the channels.

87. (Currently Amended} The apparatus as recited in claim 86, wherein said spreading code generation means includes:

counting means for consecutively producing a count value in synchronization with a clock signal;

first spreading code generation means responsive to the count value and the spreading factor for generating the spreading codes [[code]] to be allocated to the data ~~channel~~ channels; and

second spreading code generation means responsive to the count value and the spreading factor for generating the spreading code to be allocated to the control channel.

88. (Currently Amended) The apparatus as recited in claim 87, wherein the first spreading code generation means includes:

first logical operation means responsive to the count value for carrying out a logical operation with the spreading factor and the code number related to [[the]] a data part, to thereby generate the spreading code related to the data part; and

first selection means for outputting the spreading code related to the data part in response to a select signal as the spreading factor related to the data part.

89. (Previously Presented) The apparatus as recited in claim 87, wherein the second spreading code generation means includes:

second logical operation means responsive to the count value for carrying out a logical operation with the spreading factor and the code number related to the control part, to thereby generate the spreading code related to the control part; and

second selection means for outputting the spreading code related to the control part in response to a select signal as the spreading factor related to the control part.

90. (Previously Presented) The apparatus as recited in claim 89, wherein said second logical operation means receives a code number of $I_7I_6I_5I_4I_3I_2I_1I_0$, a count value of $B_7B_6B_5B_4B_3B_2B_1B_0$ and a predetermined spreading factor.

91. (Previously Presented) The apparatus as recited in claim 90, wherein the second logical operation means carries out a logical operation of $\prod_{l=0}^{N-2} \oplus I_l \bullet B_{N-l-1}$ if the predetermined spreading factor is 2^N where N is 2 to 8.

92. (Previously Presented) The apparatus as recited in claim 88, wherein said first logical operation means receives a code number of $I_7I_6I_5I_4I_3I_2I_1I_0$, a count value of $B_7B_6B_5B_4B_3B_2B_1B_0$ and a predetermined spreading factor.

93. (Previously Presented) The apparatus as recited in claim 92, wherein the first logical operation means carries out a logical operation of $\prod_{i=0}^{N-2}{}^{\oplus} I_i \bullet B_{N-1-i}$ if the predetermined spreading factor is 2^N where N is 2 to 8.

94. (Previously Presented) The apparatus as recited in claim 87, wherein said counting means includes an 8-bit counter when the 2^N is a maximum spreading factor.

95. (Canceled).

96. (Currently Amended) The apparatus as recited in claim 88, wherein said first logical operation means includes a plurality of AND gates and a plurality of exclusive OR gates. ~~, respectively.~~

97. (Currently Amended) The apparatus as recited in claim 88, wherein said first selection means includes a multiplexer. ~~, respectively.~~

98. (Canceled).

99. (Previously Presented). The apparatus as recited in claim 83, wherein said mobile station includes two, three, four, five or six data channels.

100. (Canceled).

101. (Currently Amended) The apparatus as recited in claim 83, wherein the spreading factor related to the data part is 2^N where N = 2 to 8 and wherein the code number related to the data part is $2^N/4$. ~~and wherein the data part is allocated to the data channel.~~

102. (Previously Presented) The apparatus as recited in claim 83, wherein said code generating means further includes;

signature generation means for generating a predetermined signature; and

scrambling code generation means for generating a scrambling code.

103. (Currently Amended) The apparatus as recited in claim 102, wherein the code numbers related to the data part and the control part are dependent on the predetermined signature, if the scrambling code is shared by multiple mobile stations. ~~and wherein the data part and the control part are allocated to the data channel and the control channel, respectively.~~

104. (Canceled).

105. (Currently Amended) The apparatus as recited in claim 103, [[104,]] wherein the spreading factor related to the data part is 2^N where N = 5 to 8 and wherein the code number related to the data part is $2^N(S-1)/16$.

106. (Currently Amended) The apparatus as recited in claim 83, further comprising [[:]] scrambling means for scrambling the data and control parts and a scrambling code [[,]] to thereby rotate the two points and generate scrambled signals.

107. (Previously Presented) The apparatus as recited in claim 106, further comprising:

filtering means for pulse-shaping the scrambled signals and generating pulse-shaped signals; and

gain adjusting means for adjusting gain of each of the pulse-shaped signals.

108. (Previously Presented) The apparatus as recited in claim 106, wherein one of the two points is rotated to clockwise direction and the other is rotated to counterclockwise direction by a phase of 45°, respectively.

109. (Previously Presented) The apparatus as recited in claim 108, wherein a phase difference between the rotated points is 90°.

110-112. (Canceled).

113. (Currently Amended) A mobile station for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer equal to larger than two) and a control channel, the mobile station comprising:

channel coding means for encoding the source data to generate (N-1) ~~number of~~ data parts and a control part, wherein the data parts are [[part is]] allocated to the data channels ~~channel~~ and the control part is allocated to the control channel;

code generating means for generating N ~~number of~~ spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of each data part and the control part and the spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

spreading means for spreading the control part and the data parts by using the spreading codes[[,]] to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, ~~and wherein~~

~~said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part, and wherein~~

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes the spreading factor and 0 the code number, ~~and wherein in case said mobile station includes at least two data channels,~~

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1}, ~~respectively,~~

when there are more than two data channels, the spreading codes allocated to [[the]] a third data channel and, when present, a fourth data channel ~~channels~~ are represented by

$C_{4,3}$ = {1, -1, -1, 1}, ~~respectively,~~ and

when there are more than four data channels, the spreading codes allocated to [[the]] a fifth data channel and, when present, a sixth data channel ~~channels~~ are represented by $C_{4,2}$ = {1, -1, 1, -1}. ~~, respectively.~~

114-115. (Canceled).

116. (Previously Presented) The mobile station as recited in claim 113, further comprising:

frequency converting means coupled to said spreading means for converting the channel-modulated signal to a radio frequency signal; and

antenna for sending the radio frequency signal to a base station.

117. (Currently Amended) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

a) encoding the source data to generate (N-1) ~~number of~~ data parts [[part]] and a control part, wherein the data parts are [[part is]] allocated to the data channels ~~channel~~ and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

c) spreading the control part and the data part by using the spreading codes [[code,]] to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, [[and]]

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes a spreading factor and 0 a code number, [[and]]

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1}, ~~respectively,~~

when there are more than two data channels, the spreading codes allocated to [[the]] a third data channel and, when present, a fourth data channel ~~channels~~ are represented by $C_{4,3}$ = {1, -1, -1, 1}, ~~respectively,~~ and

when there are more than four data channels, the spreading codes allocated to [[the]] a fifth data channel and, when present, a sixth data channel ~~channels~~ are represented by $C_{4,2}$ = {1, -1, 1, -1}. ~~, respectively.~~

118. (Canceled).

119. (Previously Presented) The method as recited in claim 117, wherein said step a) includes the steps of:

al) encoding the source data to generate the data part and the control part; and

a2) generating a spreading factor related to the data rate of the data part.

120. (Previously Presented) The method as recited in claim 119, wherein said step b) includes the steps of:

b1) generating code numbers for the channels in response to the spreading factor; and

b2) generating the spreading code to be allocated to the channels in response to the spreading factor and the code number.

121. (Previously Presented) The method as recited in claim 120, wherein said mobile station includes a data channel and a control channel for PRACH application.

122. (Previously Presented) The method as recited in claim 120, wherein said step b2) includes the steps of:

b2-a) producing a count value in synchronization with a clock signal; and

b2-b) carrying out a logical operation with the spreading factor and the code number related to the data part and the control part in response to the count value, to thereby generate the spreading code related to the data part.

123. (Previously Presented) The method as recited in claim 122, wherein the code number and the count value are represented by an 8-bit signal of $I_7I_6I_5I_4I_3I_2I_1I_0$ and an 8-bit signal of $B_7B_6B_5B_4B_3B_2B_1B_0$, respectively.

124. (Previously Presented) The method as recited in claim 123, wherein the logical operation is accomplished by $\prod_{i=0}^{N-1} \oplus I_i \bullet B_{N-1-i}$ if the spreading factor is 2^N where N is 2 to 8.

125. (Canceled).

126. (Previously Presented). The method as recited in claim 117, wherein the mobile station includes two, three, four, five or six data channels.

127. (Canceled).

128. (Previously Presented) The method as recited in claim 120, wherein the spreading factor related to the data part is 2^N where N = 2 to 8 and wherein the code number related to the data part is $2^N/4$.

129. (Previously Presented) The method as recited in claim 121, wherein said step b) further includes the steps of:

b3) generating a predetermined signature; and

b4) generating a scrambling code.

130. (Currently Amended) The method as recited in claim 129, wherein the code numbers related to the data part and the control part are dependent on the predetermined signature, if the scrambling code is shared by multiple mobile stations. ~~and wherein the data part and the control part are allocated to the data channel and the control channel, respectively.~~

131-132. (Canceled).

133. (Currently Amended) The method as recited in claim 117, further comprising the step of:

d) scrambling the data and control parts and a scrambling code, to thereby rotate the two points and generate scrambled signals.

134. (Previously Presented) The method as recited in claim 133, further comprising the step of:

e) filtering the scrambled signals and generating pulse-shaped signals; and

f) adjusting gain of the pulse-shaped signals.

135. (Currently Amended) The method as recited in claim [[117]] 133, wherein one of the two points is rotated to clockwise direction and the other is rotated to counterclockwise direction by a phase of 45°, respectively.

136. (Previously Presented) The method as recited in claim 135, wherein a phase difference between the rotated points is 90°.

137-139. (Canceled).

140. (Previously Presented) The apparatus as recited in claim 120, wherein said mobile station includes a data channel and a control channel for PRACH application.

141. (Currently Amended) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

a) encoding the source data to generate (N-1) ~~number of~~ data [[part]] parts and a control part, wherein the data [[part is]] parts are allocated to the data channel and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

c) spreading the control part and the data part by using the spreading codes [[code,]] to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, [[and]]

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes the spreading factor and 0 the code number, ~~wherein in case said mobile station includes one data channel, the spreading factor related to the data part is~~ $\cancel{2^N}$ ~~where N = 2 to 8 and wherein the code number related to the data part is~~ $\cancel{2^N/4}$ ~~and wherein in case said mobile station includes at least two data channels,~~

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = (1, 1, -1, -1}, ~~respectively,~~

when there are more than two data channels, the spreading codes allocated to [[the]] a third data channel and, when present, a fourth data channel ~~channels~~ are represented by $C_{4,3}$ = {1, -1, -1, 1}, ~~respectively,~~ and

when there are more than four data channels, the spreading codes allocated to [[the]] a fifth data channel and, when present, a sixth data channel ~~channels~~ are represented by $C_{4,2}$ = {1, -1, 1, -1}. ~~, respectively.~~

142-151. (Canceled).

152. (Currently Amended) An apparatus for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the apparatus comprising:

channel coding means for encoding the source data to generate (N-1) ~~number of~~ data parts [[part]] and a control part, wherein the data parts are [[part is]] allocated to the data channels ~~channel~~ and the control part is allocated to the control channel;

code generating means for generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

spreading means for spreading the control part and the data parts [[part]] by using the spreading codes, [[code,]] to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, ~~and wherein~~

said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part, ~~and wherein~~

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes the spreading factor and 0 the code number, [[and]]

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1}, and ~~respectively;~~

said code generating means includes ~~including~~ control means responsive to the spreading factor for generating code numbers for the channels, and spreading code generation means responsive to the spreading factor and the code number for generating the spreading code to be allocated to the channels, said spreading code generation means including, counting means for consecutively producing a count value in synchronization with a clock signal, first spreading code generation means responsive to the count value and the spreading factor for generating the spreading code to be allocated to the data channel, and second spreading code generation means responsive to the count value and the spreading factor for generating the spreading code to be allocated to the control channel.

153. (Previously Presented) The apparatus as recited in claim 152, wherein the first spreading code generation means includes:

first logical operation means responsive to the count value for carrying out a logical operation with the spreading factor and the code number related to the data part, to thereby generate the spreading code related to the data part; and

first selection means for outputting the spreading code related to the data part in response to a select signal as the spreading factor related to the data part.

154. (Previously Presented) The apparatus as recited in claim 152, wherein the second spreading code generation means includes:

second logical operation means responsive to the count value for carrying out a logical operation with the spreading factor and the code number related to the control part, to thereby generate the spreading code related to the control part; and

second selection means for outputting the spreading code related to the control part in response to a select signal as the spreading factor related to the control part.

155. (Previously Presented) The apparatus as recited in claim 154, wherein said second logical operation means receives a code number of $I_7I_6I_5I_4I_3I_2I_1I_0$, a count value of $B_7B_6B_5B_4B_3B_2B_1B_0$ and a predetermined spreading factor.

156. (Previously Presented) The apparatus as recited in claim 155, wherein the second logical operation means carries out a logical operation of $\prod_{i=0}^{N-1} \oplus I_i \bullet B_{N-1-i}$ if the predetermined spreading factor is 2^N where N is 2 to 8.

157. (Previously Presented) The apparatus as recited in claim 153, wherein said first logical operation means receives a code number of $I_7I_6I_5I_4I_3I_2I_1I_0$, a count value of $B_7B_6B_5B_4B_3B_2B_1B_0$ and a predetermined spreading factor.

158. (Previously Presented) The apparatus as recited in claim 157, wherein the first logical operation means carries out a logical operation of $\prod_{i=0}^{N-1} \oplus I_i \bullet B_{N-1-i}$ if the predetermined spreading factor is 2^N where N is 2 to 8.

159. (Currently Amended) An apparatus for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the apparatus comprising:

channel coding means for encoding the source data to generate (N-1) ~~number of~~ data parts [[part]] and a control part, wherein the data parts are [[part is]] allocated to the data channel and the control part is allocated to the control channel;

code generating means for generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

spreading means for spreading the control part and the data part by using the spreading codes, ~~code,~~ to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to ~~code is~~ an orthogonal variable spreading factor (OVSF) code, ~~and wherein~~

said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part, ~~and wherein~~

the spreading code allocated to the control channel is represented by $C_{256,0}$, where ~~and wherein~~ 256 denotes the spreading factor and 0 the code number, [[and]]

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1), and ~~respectively;~~

said code generating means further including signature generation means for generating a predetermined signature, and scrambling code generation means for generating a scrambling code, wherein said code numbers related to the data part and the control part are dependent on the predetermined signature, if the scrambling code is shared by multiple mobile stations and wherein the data part and the control part are allocated to the data channel and the control channel, respectively, and wherein the spreading factor related to the control part is 256 and wherein the code number related to the control part is 16(S-1)+15 where S = 1 to 16 and S is the predetermined signature.

160. (Previously Presented) The apparatus as recited in claim 159, wherein the spreading factor related to the data part is 2^N where N = 5 to 8 and wherein the code number related to the data part is $2^N(S-1)/16$.

161. (Currently Amended) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

a) [[b)]] encoding the source data to generate (N-1) ~~number of~~ data [[part]]parts and a control part, wherein the data parts are [[part is]] allocated to the data channel and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

c) spreading the control part and the data part by using the spreading codes[[code,]] to thereby generate the channel-modulated signal,

wherein the spreading code is an orthogonal variable spreading factor (OVSF) code and the spreading code allocated to the control channel is represented by $C_{256,0}$, ~~and wherein~~ where 256 denotes spreading factor and 0 the code number, [[and]]

the spreading codes allocated to first and second data channels are represented by $C_{4,1}$ = {1, 1, -1, -1}, ~~respectively;~~ and

said step a) ~~including,~~ includes:

a1) encoding the source data to generate the data part and the control part; and

a2) generating a spreading factor related to the data said step b) including,

b1) generating code numbers for the channels in response to the spreading factor; and

b2) generating the spreading code to be allocated to the channels in response to the spreading factor and the code number, said step b2) further including:[[,]]

b2-a) producing a count value in synchronization with a clock signal; and

b2-b) carrying out a logical operation with the spreading factor and the code number related to the data [[part]] parts and the control part in response to the count value[[,]] to thereby generate the spreading code related to the data part.

162. (Previously Presented) The method as recited in claim 161, wherein the code number and the count value are represented by an 8-bit signal of $I_7I_6I_5I_4I_3I_2I_1I_0$ and an 8-bit signal of $B_7B_6B_5B_4B_3B_2B_1B_0$, respectively.

163. (Previously Presented) The method as recited in claim 162, wherein the logical operation is accomplished by $\prod_{i=0}^{N-2} \oplus I_i \bullet B_{N-1-i}$ if the spreading factor is 2^N where N is 2 to 8.

164. (Currently Amended) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) ~~number of~~ data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

c) encoding the source data to generate (N-1) ~~number of~~ data [[part]] parts and a control part, wherein the data [[part is]] parts are allocated to the data ~~channel~~channels and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels, wherein each of the spreading codes is selected on the basis of a data rate of the data [[part]] parts and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain; and

c) spreading the control part and the data [[part]] parts by using the spreading codes [[code,]] to thereby generate the channel-modulated signal,

wherein:

the spreading [[code is]] codes correspond to an orthogonal variable spreading factor (OVSF) code, [[and]]

the spreading code allocated to the control channel is represented by $C_{256,0}$, ~~and wherein~~ where 256 denotes the spreading factor and 0 the code number, [[and]] the spreading codes allocated to first and second data channels are represented by $C_{4,1} = (1, 1, -1, -1\}$, ~~respectively;~~

said step a) ~~including,~~ includes:

a1) encoding the source data to generate the data part and the control part; and

a2) generating a spreading factor related to the data rate of the data part;

said step b) ~~including,~~ includes:

b1) generating code numbers for the channels in response to the spreading factor; [[and]]

b2) generating the spreading code to be allocated to the channels in response to the spreading factor and the code number;

~~said step b) further including,~~

b3) generating a predetermined signature; and

b4) generating a scrambling code;

~~wherein~~ the code numbers related to the data [[part]] parts and the control part are dependent on the predetermined signature, if the scrambling code is shared by multiple mobile stations.~~ and wherein the data part and the control part are allocated to the data channel and the control channel, respectively; and~~

~~wherein the spreading factor related to the control part is 256 and wherein the code number related to the control part is 16(S-1)+15 where S = 1 to 16 and S is the predetermined signature.~~

165. (Currently Amended) The method as recited in claim 164, wherein the [[SF]] spreading factor related to a [[the]] data part is 2^N where N = 5 to 8 and wherein the code number related to the data part is $2^N(S-1)/16$.

166. (New) The apparatus as recited in claim 83, wherein said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part.

167. (New) The mobile station as recited in claim 113, wherein said channel coding means includes spreading factor generation means for generating a spreading factor related to the data rate of the data part.

168. (New) An apparatus for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) data channels (N is an integer larger than two) and a control channel, the apparatus comprising:

channel coding means for encoding the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channels and the control part is allocated to the control channel;

code generating means for generating spreading codes to be allocated to the channels; and

spreading means for spreading the control part and the data part by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes the spreading factor and 0 the code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,1} = \{1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,2} = \{1, -1, 1, -1\}$.

169. (New) A mobile station for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data, wherein the mobile station uses (N-1) data channels (N is an integer equal to larger than two) and a control channel, the mobile station comprising:

channel coding means for encoding the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channels and the control part is allocated to the control channel;

code generating means for generating N spreading codes to be allocated to the channels; and

spreading means for spreading the control part and the data parts by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes the spreading factor and 0 the code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,1} = \{1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,2} = \{1, -1, 1, -1\}$.

170. (New) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

a) encoding the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channels and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels; and

c) spreading the control part and the data part by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes a spreading factor and 0 a code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,1} = \{1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,\,2} = \{1, -1, 1, -1\}$.

171. (New) A method for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station, wherein the mobile station uses (N-1) data channels (N is an integer larger than two) and a control channel, the method comprising the steps of:

a) encoding the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channel and the control part is allocated to the control channel;

b) generating spreading codes to be allocated to the channels; and

c) spreading the control part and the data part by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes the spreading factor and 0 the code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,\,1} = (1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,\,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,\,2} = \{1, -1, 1, -1\}$.

172. (New) An apparatus for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data in a mobile station,

wherein the mobile station uses (N-1) data channels (N is an integer larger than two) and a control channel, the apparatus comprising:

a channel coder configured to encode the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channels and the control part is allocated to the control channel;

a code generator configured to generate spreading codes to be allocated to the channels; and

a spreader configured to spread the control part and the data part by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes the spreading factor and 0 the code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,1} = \{1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,2} = \{1, -1, 1, -1\}$.

173. (New) The apparatus as recited in claim 172, wherein each of the spreading codes is selected on the basis of a data rate of the data part and the control part and spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent to two points located on the same point or symmetrical with respect to a zero point on a phase domain.

174. (New) The apparatus as recited in claim 172, further comprising a processor that implements the channel coder, the code generator, and the spreader.

175. (New). The apparatus as recited in claim 172, wherein said mobile station includes two, three, four, five or six data channels.

176. (New) A mobile station for converting source data to a channel-modulated signal having a plurality of pairs of in-phase (I) and quadrature-phase (Q) data, wherein the mobile station uses (N-1) data channels (N is an integer larger than two) and a control channel, the mobile station comprising:

a channel coder configured to encode the source data to generate (N-1) data parts and a control part, wherein the data parts are allocated to the data channels and the control part is allocated to the control channel;

a code generator configured to generate N spreading codes to be allocated to the channels; and

a spreader configured to spread the control part and the data parts by using the spreading codes to thereby generate the channel-modulated signal,

wherein:

the spreading codes correspond to an orthogonal variable spreading factor (OVSF) code,

the spreading code allocated to the control channel is represented by $C_{256,0}$, where 256 denotes the spreading factor and 0 the code number,

the spreading codes allocated to first and second data channels are represented by $C_{4,1} = \{1, 1, -1, -1\}$,

when there are more than two data channels, the spreading codes allocated to a third data channel and, when present, a fourth data channel are represented by $C_{4,3} = \{1, -1, -1, 1\}$, and

when there are more than four data channels, the spreading codes allocated to a fifth data channel and, when present, a sixth data channel are represented by $C_{4,2} = \{1, -1, 1, -1\}$.

177. (New) The mobile station as recited in claim 176, wherein each of the spreading codes is selected on the basis of a data rate of each data part and the control part and the spreading codes are selected so that two consecutive pairs of the I and Q data are correspondent

to two points located on the same point or symmetrical with respect to a zero point on a phase domain.

178. (New) The mobile station as recited in claim 176, further comprising a processor that implements the channel coder, the code generator, and the spreader.

179. (New) The mobile station as recited in claim 176, wherein said mobile station includes two, three, four, five or six data channels.